



Institutional projects from a private sector perspective

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Altamira Information





Introduction to Altamira Information

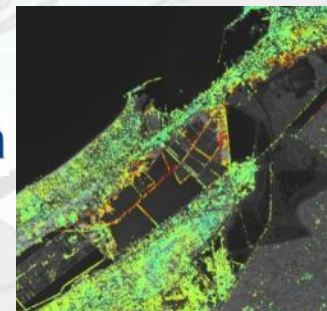
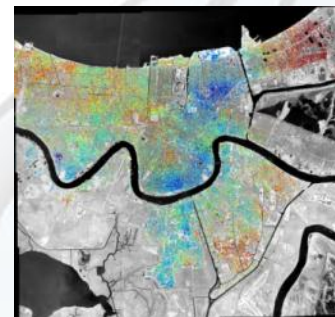
ALTAMIRA INFORMATION is an experienced EO company that provides ground deformation measurements with millimetric precision and mapping solutions using satellite images.

- **ALTAMIRA** was founded in Barcelona in 1999 and opened offices in Toulouse (France) and Calgary (Canada) – part of the **CLS group** since 2010
- The team brings together more than 35 staff with wide **InSAR** technical and scientific background.
- ALTAMIRA services are provided using its own PSInSAR software: the **Stable Point Network** processing chain (SPN).

- Main clients in the domain of infrastructures, mining and Oil and Gas

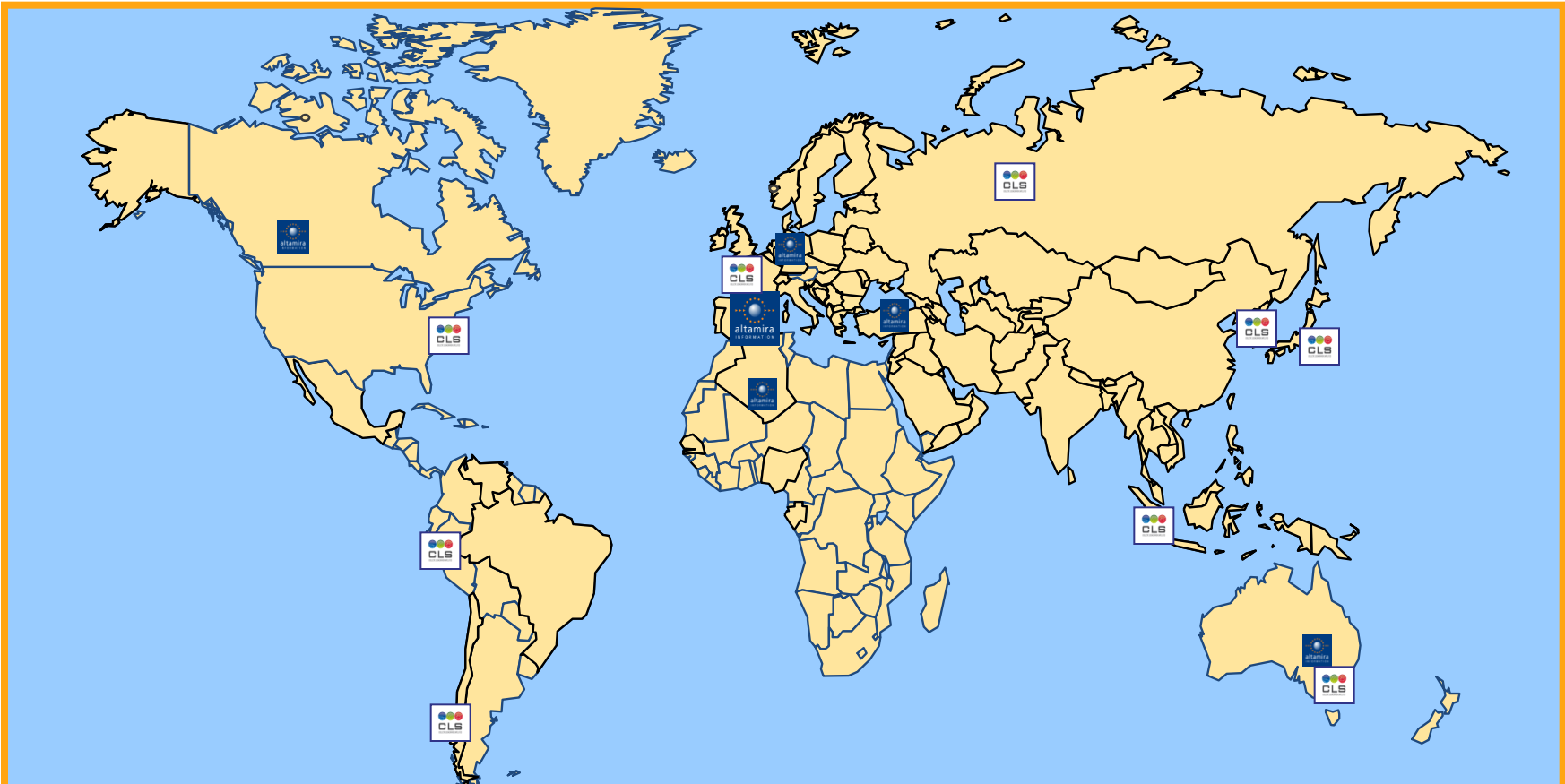


- **Institutional and Cooperation projects:**
 - Support for Natural Hazards in New Orleans Katrina's Hurricane (CSA, USGS, NASA)
 - Support for Climate Change studies in Alexandria 2009-2010 (World Bank)





Our branches & worldwide presence



Altamira Information brings together a team of engineering experts in InSAR technology. With headquarters based in Barcelona (Spain) and 12 branches worldwide we are currently expanding with agents into new areas.



The proposed service – Ground motion measurement

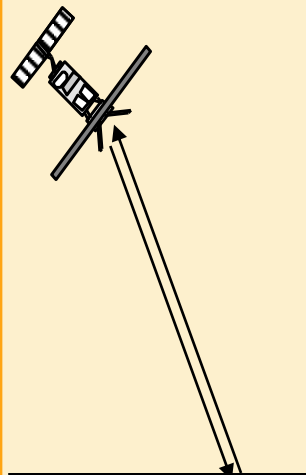
Radar satellites

In terferometric = Superimposition of waves to detect differences

S ynthetic
A perture = High resolution radar system
R adar

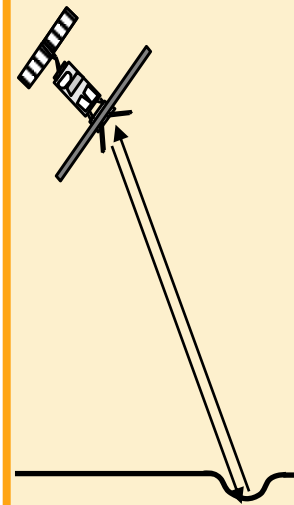


1st satellite pass 1st measurement



Reference distance between sensor and ground measured with millimetric precision

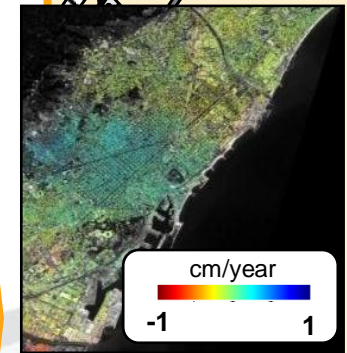
2nd satellite pass 2nd measurement



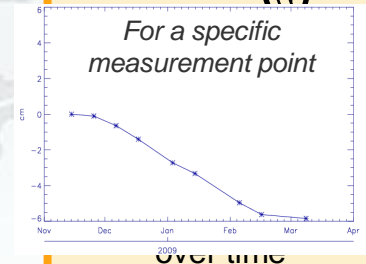
Detecting a change of distance between sensor and ground indicates movement

Nth satellite pass Nth measurement

Ground motion measurements map



Time series for each point

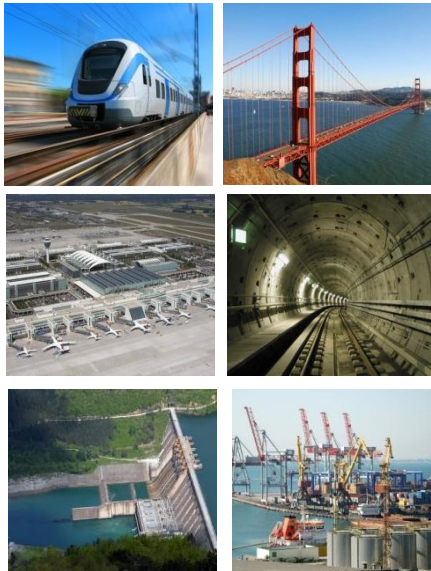


Ground movement is measured with radar satellites, comparing the distance between the sensor and the ground surface at different moments in time.



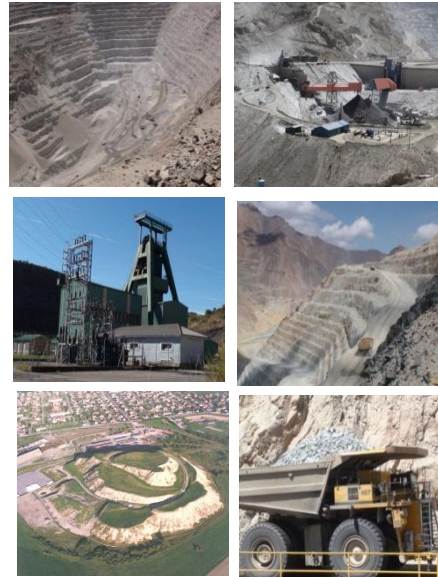
Main Application Sectors

Infrastructures



- Infrastructures (railway, ports, tunnel, metro, bridges..) monitoring
- Planning, construction

Mining



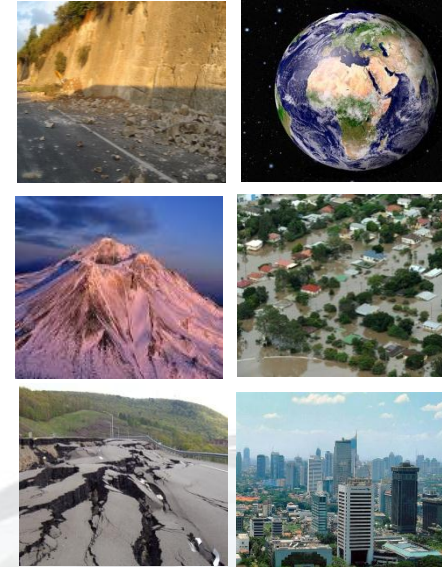
- Open pit mines and slopes
- Underground mines
- Infrastructures (dump areas, tailing dams...)

Oil & Gas



- Reservoirs and pipelines monitoring
- Unconventional gas storage
- LNG terminals...

Institutional



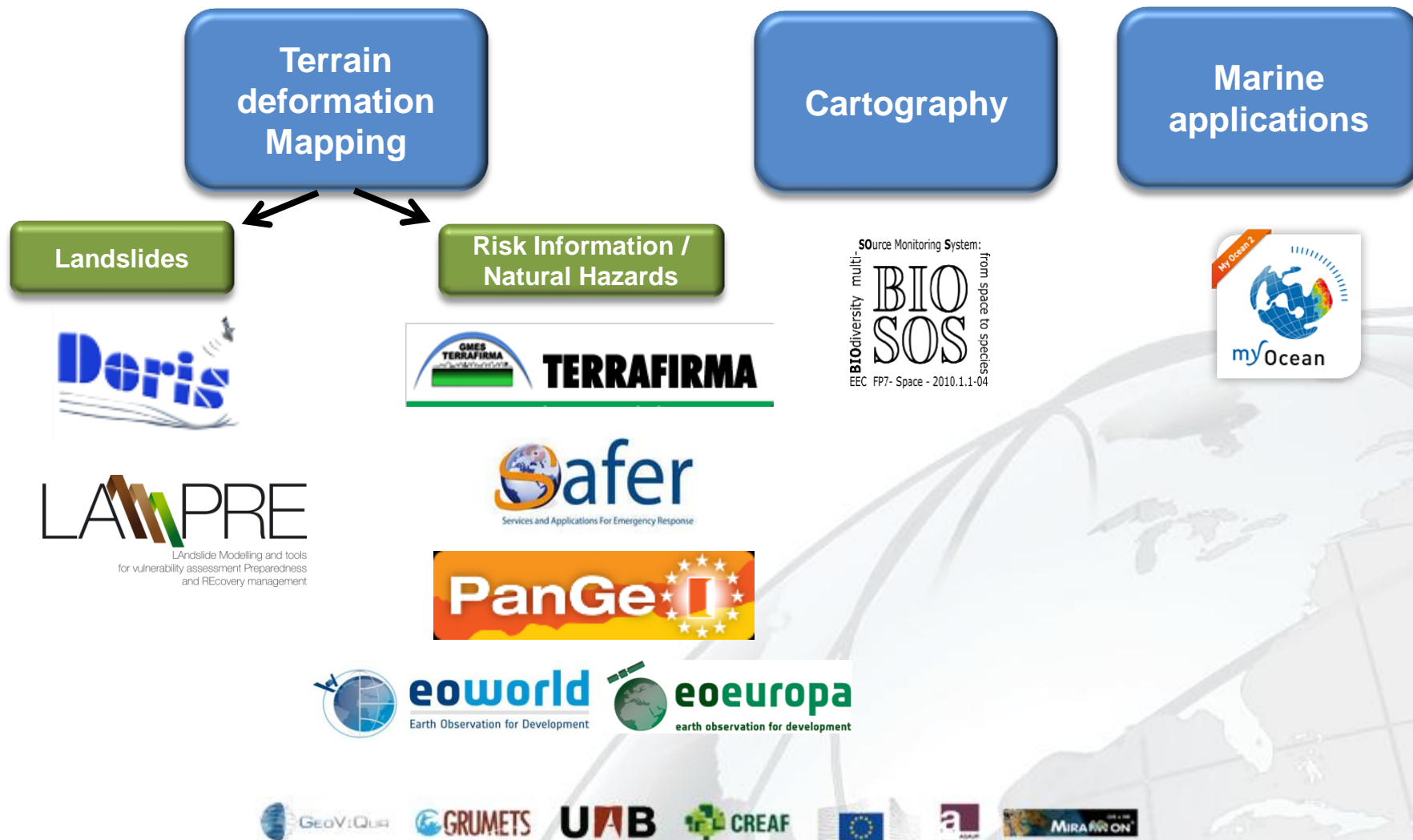
- Natural Hazards mitigation
- Safety improvement
- Hazard information services (floods, climate changes...)





Institutional and Cooperation projects

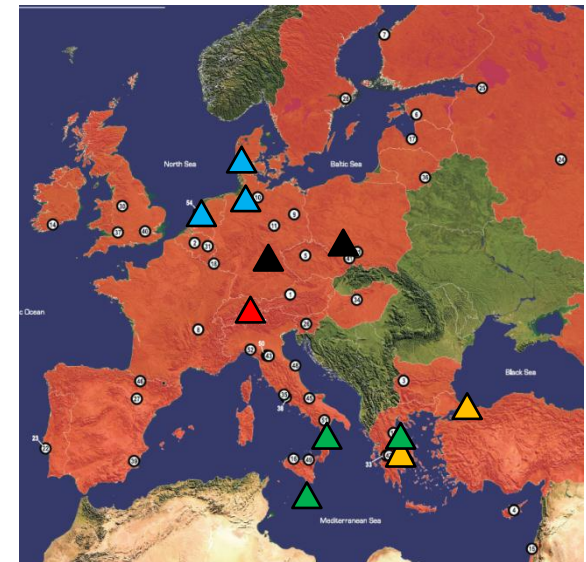
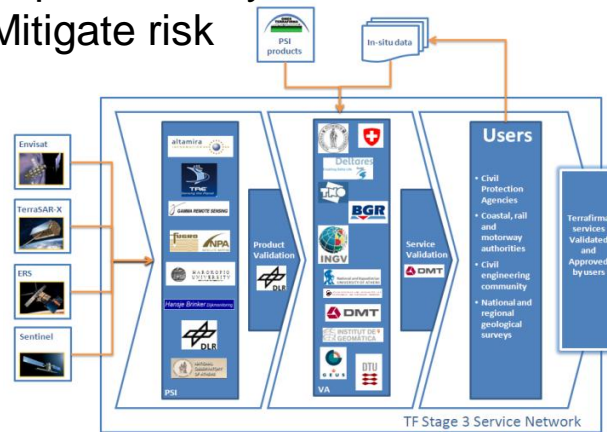
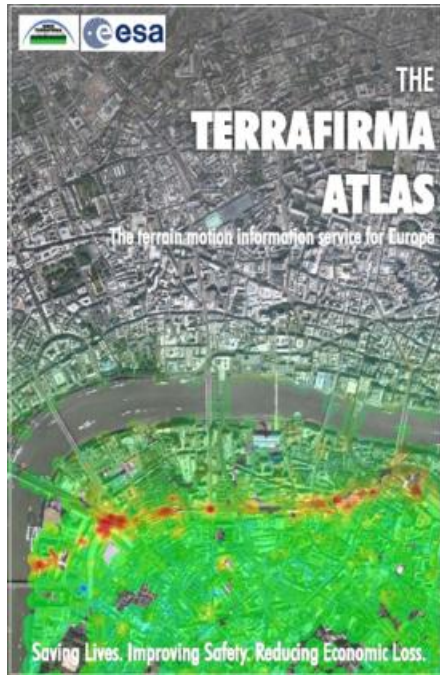
- Organised following 3 main domains of applications:



A Success Story...

Terrafirma is one of the services supported by the European Space Agency's (ESA) Global Monitoring for Environment and Security (GMES) Service Element Programme

- Terrafirma provides a ground motion hazard information service, distributed throughout Europe via national geological surveys and institutions.
- The objective of this service is to help
 - Identify hazards
 - Improve safety,
 - Mitigate risk



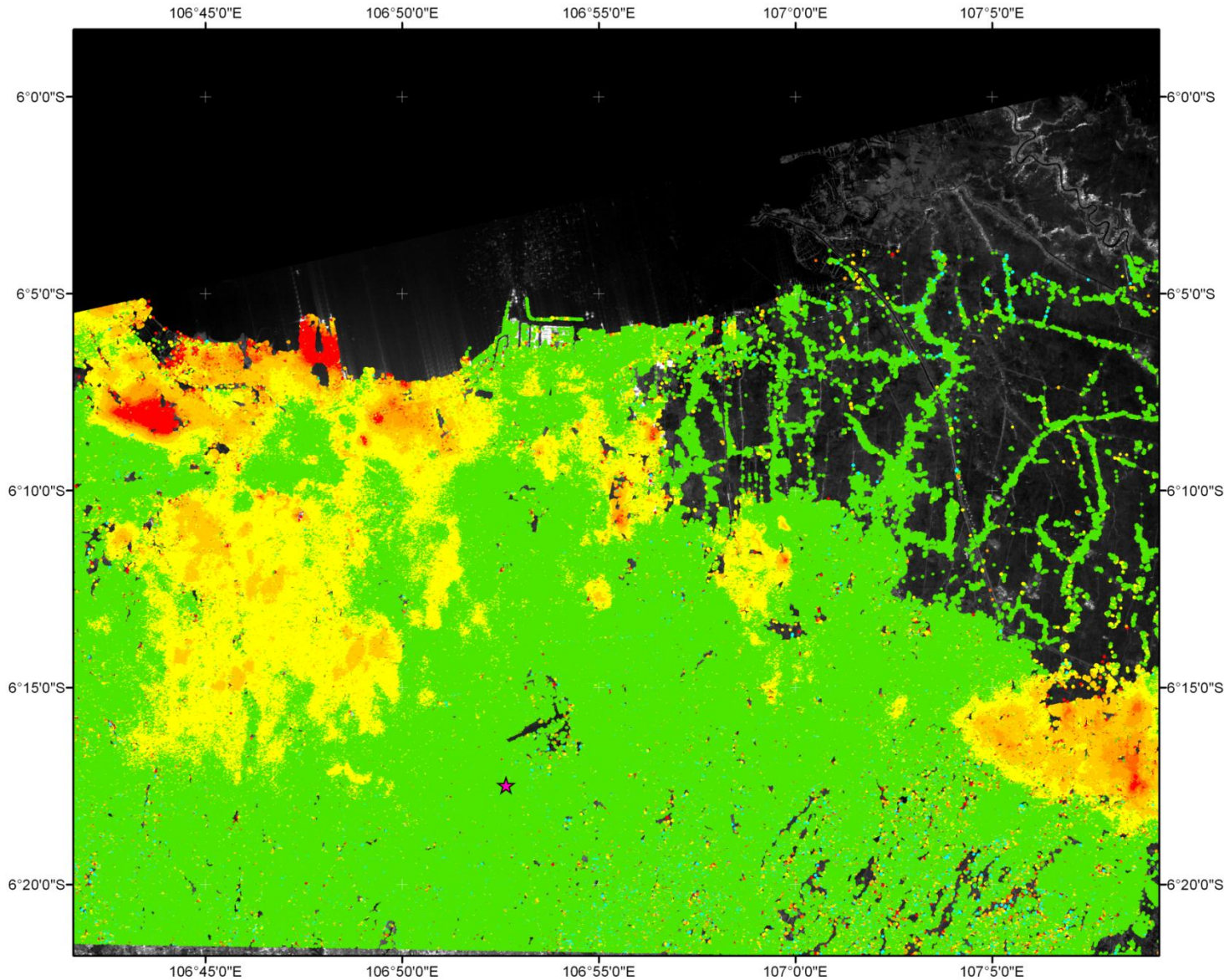
ALTAMIRA INFORMATION has been appointed by ESA as leader of the Terrafirma project: bringing together a consortium of 20 European experts in Earth Observation, Geological Surveys, and specialists in landslides, hydrogeology, tectonics and flooding.



- EOWorld project aims at demonstrate the utility of the EO-based services within World Bank projects.
- Altamira has led 3 of the 12 pilot projects defined within the partnership.
- Main theme is the **Urban Risk Management** with subsidence problems in coastal lowland areas prone to flooding and flood defence systems.

Region of interest	Project Title
Latin America Caribbean	Building Flood Defence Systems in Guyana
East Asia Pacific	Multi-Hazard Vulnerability Assessment in Ho Chi Minh City and Yogyakarta
East Asia Pacific	Analysis of Land Subsidence of Jakarta

Terrain Deformation Measurements in Jakarta based on the PSI analysis of ALOS PALSAR data (2007-2011)



Location



Legend - Displacement rate (in mm/yr)

- ★ ALOS meas. reference point
- more than -75.0
- from -75.0 to -60.0
- from -60.0 to -45.0
- from -45.0 to -30.0
- from -30.0 to -15.0
- from -15.0 to 15.0
- from 15.0 to 30.0
- from 30.0 to 45.0
- from 45.0 to 60.0
- from 60.0 to 75.0
- more than 75.0

Interpretation

World Bank is currently preparing a project to mitigate flood risk in the city of Jakarta. To achieve this, geo-information is needed concerning flood hazard (coastal flood, sea water intrusion, etc) and risk assessment. This includes an assessment of the hydraulic network and investigations of possible land subsidence in the urban & per-urban area of the city of Jakarta. The present service aims to contribute to this project by generating land motion mapping over the AOI by exploiting Medium Resolution Radar sensors through the 'Persistent Scatterer Interferometry' (PSI) technique.

The map represents the deformation rate in the AOI derived from the analysis of 20 ALOS images, acquired over 4 years, from 2007 to beginning 2011. The results are overlaid on the mean reflectivity image computed considering the ALOS data stack. The centre-southern District of Jakarta, the Jakarta Bay and the suburban District of Cikarang show subsidence rates up to -75 mm/year over the monitoring period.

Local Projection: UTM zone 48 South
Datum: WGS 1984

1:180,000



Data sources

INSAR Results derived from the use of 20 ALOS images acquired from 2007 to 2011.
Copyright: Altamira Information, 2011



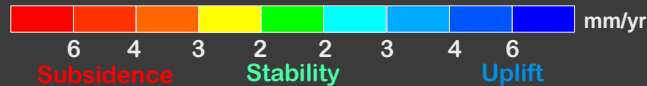
The aim of EOWORLD is to produce, deliver and assess the benefits of EO-based geo-information services in support of on-going World Bank project activities. This work forms part ESA's efforts to raise awareness within the World Bank of European and Canadian EO missions (both ESA and national), and the capabilities of EO service providers to provide information customized to the needs of individual projects. The World Bank together with ESA have identified 12 specific EOWORLD Actions for which EO-based information has significant potential.



LANDSLIDES IN MALLORCA



ERS | 13/06/1992 – 07/11/2000



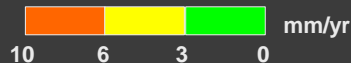
ALOS | 04/01/2007 – 30/05/2010



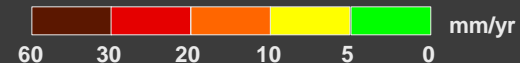
RESULTS INTERPRETATION



ERS | 1992 – 2000



ALOS | 2006 – 2010



MyOcean project

- Pan-European project for an operational marine service, a joint effort of more than 60 partners
- The MyOcean catalogue counts with **more than 100 oceanographic products** that include in-situ, modelling, and earth observation data sources.
- Today, it serves **over 2000 users** with an average of **52000 download requests per month**
- On April 23rd, MyOcean V3 will be released.



- Altamira contributes to:
 - WP16 ⇒ Central Information System: responsible for the web portal and applications for the distribution of oceanographic data.
 - WP2.3 ⇒ Service Engineering: design of human processes, service integration and verification

Search and discover, browse the catalogue

1 • AN AREA

- All areas
- Global Ocean
- Arctic Ocean
- Baltic Sea
- Atlantic-European North West Shelf-Ocean
- Atlantic-Iberian Biscay Irish-Ocean
- Mediterranean Sea
- Black Sea

2 • A PARAMETER

- All parameters
- Ocean Temperature
- Ocean Salinity
- Ocean Currents
- Sea Ice
- Sea Level
- Winds
- Ocean Optics
- Ocean Chemistry
- Ocean Biology
- Ocean Chlorophyll

3 • A PRODUCT TYPE

- All product types
- Forecast Products
- Near Real Time Products
- Multi Year Products
- Time Invariant Products






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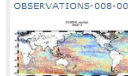
Free text:

REFINE RESULTS

Show: 5 results per page

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

SEALEVEL-GLO-SLA-L3-NRT-OBSERVATIONS-008-001-a



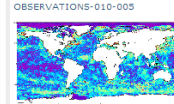
GLOBAL OCEAN ALONG-TRACK SEA SURFACE HEIGHTS NRT

SATELLITE-OBSERVATION, SEA-LEVEL, NEAR-REAL-TIME, GLOBAL-OCEAN

For the Global Ocean- Mono altimeter satellite along-track sea surface heights computed with respect to a seven-year mean. All the missions are homogenized with respect to a reference mission which is currently Jason-2. The acquisition of various altimeter data is a few days at most. This product is computed with a non-centered computation time window (6 weeks before the date).

INFO
DATA ACCESS
VIEW

SST-GLO-SST-L4-NRT-OBSERVATIONS-010-005



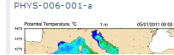
GLOBAL OCEAN SEA SURFACE TEMPERATURE MULTI PRODUCT ENSEMBLE (GMPE)

SATELLITE-OBSERVATION, TEMPERATURE, NEAR-REAL-TIME, GLOBAL-OCEAN

For The Global Ocean- The GRSST Multi-Product Ensemble (GMPE) system has been implemented at the UK Met Office which takes inputs from various analysis production centres on a routine basis and produces ensemble products at 0.25deg.x0.25deg. horizontal resolution.

INFO
DATA ACCESS
VIEW

MEDSEA-ANALYSIS-FORECAST-PHYS-006-001-a



MEDITERRANEAN SEA PHYSICS ANALYSIS AND FORECAST

NUMERICAL-MODEL, TEMPERATURE, SALINITY, CURRENTS, FORECAST, NEAR-REAL-TIME, MEDITERRANEAN-SEA

The Mediterranean Ensemble System, physical component

INFO
DATA ACCESS
VIEW

View

Pan European Seas, Ocean Colour Chlorophyll Concentration (monthly average) Reprocessed (1997-2010)

Product: OCEANCOLOUR_EUR_CHL_L3_REP_OBSERVATIONS_009_010

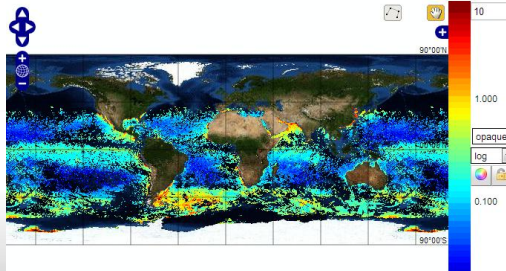
Dataset: SeaWiFS Level-3 Standard Mapped Image

Variable: mass_concentration_of_chlorophyll_in_sea_water

Units: milligram m-3

Time: 2010-12-01 to 00:00:00.000Z

Elevation: 0



Download

OCEANCOLOUR_GLO_CHL_SEAWIFS_L3_RAN_OBSERVATIONS_009_007_B

SELECTION

Select output: NetCDF

Select region: Product Region

89.958259582

-179.9583435

179.95817566

-89.95832824

Select time range: 2010-12-01 to 2010-12-01

VARIABLE

Download	Name	Description	Standard name	Unit	Dimensions
<input type="checkbox"/>	chl	Mean Chlorophyll-a concentration, OC4 Algorithm	mass_concentration_of_chlorophyll_in_sea_water	milligram m-3	(time, latitude, longitude)

Script

Download

Print and share



PRODUCT DATA SHEET



PAN EUROPEAN SEAS, OCEAN COLOUR CHLOROPHYLL CONCENTRATION (MONTHLY AVERAGE) REPROCESSED (1997-2010)

PRODUCT IDENTIFIER: OCEANCOLOUR_EUR_CHL_L3_REP_OBSERVATIONS_009_007

SHORT DESCRIPTION: For the European Seas- monthly mean sea surface Chlorophyll-a concentration derived from the SeaWiFS sensor. (in mg m-3)

VARIABLES: mass_concentration_of_chlorophyll_a_in_sea_water

GEOGRAPHICAL COVERAGE: 180.0 to 180.0

Areas: north-west-shelf-seas, Iberian-biscay-irish-seas

SPATIAL RESOLUTION: 2.0 km

VERTICAL COVERAGE: from 0m to 0m (CRS=EPSG:5714)


TEMPORAL RESOLUTION: monthly mean

TEMPORAL COVERAGE: from 1997-01-01 to 2010-12-31

UPDATE FREQUENCY: as/needed



Conclusion

- From a strategic commercial perspective, FP7 funds shall not represent a mere source of income but a key contribution in terms of:
 - Trans-national research cooperation
 - Achievement of scientific excellence as a backbone for technological development
 - Addressing of research towards future market demand
 - Institutional projects commonly fluctuate between 5 and 10% of Altamira's yearly revenue
- 
- In return, as a representative of commercial markets, we shall:
 - strongly contribute to the **transfer of industrial needs** among multidisciplinary research groups
 - pitch in innovation and **enhance competitiveness**



Thank you for your attention

Javier Duro
Head of Research and Development

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